

**DIRECTOR FOR PATENTS  
WASHINGTON, DC 20231**



**Docket No. ARC920010115US1  
(PATENT)**

2652 #2  
5-13-02

SIR:

Transmitted herewith for filing in the Application of: Charles T. Rettner, et al. Serial No.: 10/090,589

Title: **OPTICAL APERTURE FOR DATA RECORDING HAVING TRANSMISSION ENHANCED  
BY WAVEGUIDE MODE RESONANCE**

are the following:

☐ sheets of formal drawings  
☐ Amendment  
☐ Amendment after Final Rejection  
☐ Request for Reconsideration of Final Rejection  
☐ Response to Restriction Requirement  
☐ Letter to Drawing Review Branch  
☐ Certificate of Correction  
☐ Other (specify)

☒ Information Disclosure Statement  
☐ Declaration and Power of Attorney  
☐ Assignment of the Invention (\$40.00)  
☐ Notice to File Missing Parts (\$130.00)  
☐ Petition for Extension of Time  
☐ Issue Fee (\$1,210.00)  
☐ Notice of Appeal (\$300.00)  
☐ Appeal Brief (\$300.00)

☒ NO ADDITIONAL FEE IS REQUIRED

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**APR 22 2002**

**Technology Center 2600**

OTHER THAN A SMALL ENTITY	Claims Remaining After Amendment	Highest No. Previously Paid for	Extra	Rate	Additional Fee
SUBTOTAL FROM ABOVE					\$0.00
TOTAL CLAIMS				× 22 =	
INDEPENDENT CLAIMS				× 80 =	
MULTIPLE DEP. CLAIM PRESENTED				+260 =	
TOTAL					\$0.00

Please charge my Deposit Account No. 09-0441 in the amount of \$0.00. A duplicate copy of this sheet is attached.

☒ The Commissioner is hereby authorized to charge payment for any additional filing fees required under 37 CFR 1.16 or any patent application processing fees under 37 CFR 1.17 in association with this communication or credit any overpayment to Deposit Account No. 09-0441. A duplicate copy of this sheet is attached.

**CERTIFICATE OF MAILING**

I hereby certify that the above paper/fee is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner for Patents, U.S. Patent and Trademark Office, P.O. Box 2327, Arlington, VA 22202

Date of Deposit: Cheryl G. Ruby

Person mailing paper/fee: April 11, 2002

Signature

*Cheryl G. Ruby*

**Respectfully submitted,**

Charles T. Rettner, et al.

*Daniel E. Johnson*  
Daniel E. Johnson (#37,033)

Agent for Applicant  
Telephone (408) 927-3367  
IBM Corporation  
Intellectual Property Law  
Dept. C4TA/J2B  
650 Harry Road  
San Jose, CA 95120-6099



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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of : April 11, 2002  
Charles T. Rettner et al. : Group Art Unit: Unknown  
Serial No.: 10/090,589 : Examiner: Unknown  
Filed: 02/28/02 : San Jose, California  
Title: OPTICAL APERTURE FOR DATA RECORDING HAVING  
TRANSMISSION ENHANCED BY WAVEGUIDE MODE RESONANCE

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
U.S. Patent and Trademark Office  
P.O. Box 2327  
Arlington, VA 22202

Dear Sir:

Under the provisions of 37 CFR § 1.97 through §1.99 and pursuant to Applicants' duty of disclosure under 37 CFR §1.56, Applicants respectfully bring the following document(s) listed on the attached form PTO-1449 to the attention of the Examiner in charge of the above-identified application. Copies of the listed document(s) are provided herewith.

This Information Disclosure Statement is being submitted within three months of the filing date of the above-referenced U.S. national application.  
(No fee is due.)


This submission does not constitute an admission that the cited reference(s) are relevant or material to the claims. The reference(s) are only cited as constituting related art of which Applicants are aware.

It is respectfully requested that the listed references be considered by the Examiner and formally made of record in this application.

The Director is hereby authorized to charge payment of any deficiency in the above fee(s) or to charge any additional fees required under 37 CFR § 1.16 or 1.17 or credit any overpayment to Deposit Account No. 09-0441. A duplicate copy of this authorization is attached for the Finance Branch.

Respectfully submitted,

Charles T. Rettner et al.

By   
Daniel E. Johnson (#37,933)  
Agent for Applicants  
Phone (408) 927-3367

DEJ:cgr

Attachments

Form PTO-1449 (modified)

APR 16 2002

Attorney Docket N .  
RC920010115US1Serial N .  
10/090,589LIST OF PATENTS AND PUBLICATIONS FOR  
APPLICANT(S)' INFORMATION DISCLOSURE  
STATEMENT

(Use several sheets if necessary)

Applicant(s): Charles T. Rettner et al.

Filing Date:  
02/28/02Group Art Unit:  
Unknown

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U. S. Patent Documents

APR 22 2002

Examiner Initials	Document No.	Date	Name	Technology Center 2600		Filing Date
				Class	Subclass	
	5,555,255	9/10/96	Kock et al.	372	96	11/24/93
	5,568,504	10/22/96	Kock et al.	372	96	11/24/93
	5,583,727	12/10/96	Parkin	360	113	05/15/95
	5,625,617	04/29/97	Hopkins et al.	369	121	09/06/95
	5,689,480	11/18/97	Kino	369	14	08/13/96
	5,696,372	12/09/97	Grober et al.	250	216	07/31/96
	5,936,808	08/10/99	Huang et al.	360	106	11/24/97
	5,973,316	10/26/99	Ebbesen et al.	250	216	11/26/97
	5,986,978	11/16/99	Rottmayer et al.	369	13	11/12/98
	6,016,290	11/18/00	Chen et al.	369	13	02/12/99
	6,055,220	04/25/00	Mamin et al.	369	112	03/31/98
	6,226,149	05/01/01	Dill, Jr. et al.	360	126	12/15/98

Examiner

Date Considered

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant(s).

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Unknown

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## FOREIGN PATENT DOCUMENTS

Technology Center 2800

Examiner Initials	Document No.	Date	Country	Class	Subclass	Translation Yes No
	EP -1-008-870-A1	June 14, 2000	Europe	G02B	5/20	Application

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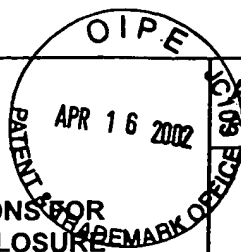
Technology Center 2600

Examiner Initials	Citation
	H. J. Rosen et al., <i>Thermally-Assisted Magnetic Recording</i> , IBM Technical Disclosure Bulletin, Vol. 40, No.10, October 1997, p. 65.
	H. S. Gill, <i>Data Recording at Ultra High Density</i> , IBM Technical Disclosure Bulletin, Vol. 39, No. 07, July 1996, p. 237.
	W. Wayt Gibbs, <i>Holey Magic</i> , Scientific American, July 1999, p. 40.
	T. Thio et al., <i>Strongly enhanced optical transmission through subwavelength holes in metal films</i> , Physica B, 279, 2000 (Elsevier Science B.V. ), pp. 90-93.
	E. Betzig et al., <i>Near-field magneto-optics and high density data storage</i> , Applied Physics Letters, Vol. 61, No. 2, July 13, 1992, pp. 142-144.
	S. Astilean et al., <i>Light transmission through metallic channels much smaller than the wavelength</i> , Optics Communications, 175, 2000 (Elsevier Science B.V. ), pp. 265-273.
	J. J. M. Ruigrok et al., <i>Disk recording beyond 100 Gb/in.2: Hybrid recording? (Invited)</i> , Journal of Applied Physics, Vol. 87, No. 9, May 1, 2000, pp. 5398-5403.
	T. McDaniel, <i>Magneto-Optical Data Storage</i> , Communications of the ACM, Vol. 43, No. 11, November 2000., pp. 57-63.
	H. Katayama et al., <i>New Developments in Laser-Assisted Magnetic Recording</i> , IEEE Transactions on Magnetics, Vol. 36, No. 1, January 2000, pp. 195-199.

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Examiner Initials	Citation
	K. E. Johnson et al., <i>Thin-film media- Current and future technology</i> , Technology Center 2600 Research & Development, Vol. 40, No. 5, September 1996, pp. 511-536.
	J. Vuckovic et al., <i>Surface Plasmon Enhanced Light-Emitting Diode</i> , IEEE Journal of Quantum Electronics, Vol. 36, No. 10, October 2000, pp. 1131-1144.
	F. Koyama et al., <i>Surface emitting lasers for optical near-field data storage</i> , SPIE Conf. on Photonics Tech. into the 21st Century, Singapore, December 1999, SPIE Vol. 3899, pp. 344-350.
	S. Shinada et al., <i>Micro-Aperture Surface Emitting Laser for Near Field Optical Data Storage</i> , IEEE, CLEO/pacific rim 1999, ThD4, pp. 618-619.
	S. Gianordoli et al., <i>Optimization of the emission characteristics of light emitting diodes by surface plasmons and surface waveguide modes</i> , Applied Physics Letters, Vol. 77, No. 15, October 9, 2000, pp. 2295-2297.
	H. Sukeda et al., <i>Thermally Assisted Magnetic Recording on Flux-Detectable RE-TM media</i> , IEEE Transactions on Magnetics, Vol. 37, No. 4, July 2001, pp. 1234-1238.
	M. Alex et al., <i>Characteristics of Thermally Assisted Magnetic Recording</i> , IEEE Transactions on Magnetics, Vol. 37, No. 4, July 2001, pp. 1244-1249.
	R. Wannemacher, <i>Plasmon-supported transmission of light through nanometric holes in metallic thin films</i> , Optics Communications, 195, 2001 (Elsevier Science B.V.), pp. 107-118.
	U. Schroter et al., <i>Surface-plasmon-enhanced transmission through metallic gratings</i> , Physical Review B, Vol. 58, No. 23, December 15, 1998, pp. 15 419-15 421.

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Form PTO-1449 (modified)  <b>LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT(S)' INFORMATION DISCLOSURE STATEMENT</b>  (Use several sheets if necessary)	Attorney Docket No. ARC920010115US1	Serial No. 10/090,589
	Applicant(s): Charles T. Rettner et al.	
	Filing Date: 02/28/02	Group Art Unit: Unknown

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Examiner Initials	Citation <span style="float: right;">APR 22 2002</span>
	<i>D. E. Grupp, Beyond the Bethe Limit: Tunable Enhanced Light Transmission Through a Single Sub-Wavelength Aperture, Advanced Materials, Vol. 11, No. 10, 1999, pp. 860-862.</i>
	<i>Thio et al., Surface-plasmon-enhanced transmission through hole arrays in Cr films, Optical Society of America, Vol. 16, No. 10, October 1999, pp. 1743-1748.</i>
	<i>H. A. Bethe, Theory of Diffraction by Small Holes, The Physical Review, Second Series, Vol. 66, Nos. 7 &amp; 8, October 1 &amp; 15, 1944, pp. 163-182.</i>
	<i>U. Durig et al., Near-field optical-scanning microscopy, Journal of Applied Physics, Vol. 59, No. 10, May 15, 1986, pp. 3318-3327.</i>
	<i>T. W. Ebbesen, Extraordinary optical transmission through sub-wavelength hole arrays, Nature, Vol. 391, February 12, 1998, pp. 667-669</i>
	<i>J. A. Porto et al., Transmission Resonances on Metallic Gateings with Very Narrow Slits, Physical Review Letters, Vol. 83, No. 14, October 4, 1999, pp. 2845-2848.</i>
	<i>A. Partovi et al., High-power laser light source for near-field optics and its application to high-density optical data storage, Applied Physics Letters, Vol. 75, No. 11, September 13, 1999, pp. 1515-1517.</i>
	<i>C. Sonnichsen et al., Launching surface plasmons into nanoholes in metal films, Applied Physics Letters, Vol. 76, No. 2, January 10, 2000, pp. 140-142.</i>
	<i>A. V. Shchegrov, Near-Field Spectral Effects due to Electromagnetic Surface Excitations, Physical Review Letters, Vol. 85, No. 7, August 14, 2000, pp. 1548-1551.</i>

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	D. E. Grupp, <i>Crucial role of metal surface in enhanced transmission through subwavelength apertures</i> , Applied Physics Letters, Vol. 77, No. 11, September 11, 2000, pp. 1569-1571.
	R. Sambles, <i>More than transparent</i> , Nature, Vol. 391, February 12, 1998, pp. 641-642.
	H. F. Ghaemi, <i>Surface plasmons enhance optical transmission through subwavelength holes</i> , Physical Review B, Vol. 58, No. 11, September 15, 1998, pp. 6779-6782.
	T. Kim et al., <i>Control of optical transmission through metals perforated with subwavelength hole arrays</i> , Optics Letters, Vol. 24, No. 4, February 15, 1999, pp. 256-258.

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